DOCUMENT RESUME

ED 179 894 CG 014 039

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TITLE Interaction Patterns in Families of Normal and Aggressive Adolescent Males.
PUB DATE Sep 79
NOTE 29p.: Paper presented at the Annual Convention of the American Psychological Association (87th, New York, NY, September 1-5, 1979)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Adolescents: *Aggression: Anti Social Behavior: Behavior Patterns: Family (Sociological Unit): *Family Relationship: Foreign Countries: *Interaction Process Analysis: *Males: *Parent Child Relationship: Research Projects: Siblings
IDENTIFIERS *Canada

ABSTRACT

The interpersonal conditions which may maintain a child's aggression in the family were investigated by observing immediate, ongoing interactions in families of normal and aggressive adolescent sons. Normal-son families (N=6) and aggressive-son families (N=6) were videotaped engaging in a 50-minute discussion of questionnaire items designed to elicite conflict. Behaviors were coded with Leary's four category system of interpersonal behavior. Results indicated that in families with an aggressive son, all members, not just the target son, were more aggressive than normal family members. Unexpectedly, what best distinguished aggressive from normal sons was an indirect, passive style of aggression rather than a more overt style of aggression. What differentiated sequential patterns of interaction in these families was not the behavioral quality of antecedent and response events by parents and son, but rather which family members were most likely to interact together. (Author)

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ED179894

Interaction Patterns in Families of Normal and Aggressive Adolescent Males

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Paper presented at the annual meeting of the American Psychological Association

New York City, September 1979

CG 014039

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INTERACTION PATTERNS IN FAMILIES OF NORMAL AND AGGRESSIVE ADOLESCENT MALES

Children who show aggressive, acting-out, antisocial behavior patterns are an important target population for both clinical and developmental research. An extremely aggressive behavior pattern typically pervades the child's entire social network, including home, school, peer, and community settings, creating a highly aversive environment for both the child and those who come in contact with the child. Once an aggressive behavior pattern develops, it shows remarkable stability over time, particularly for male children (Feshbach, 1970; Kagan & Moss, 1962; Sears, 1961), and is highly predictive of later adult psychopathy as well as other forms of severe psychopathology (Robins, 1966). Aggressive children also appear to be "experts" at escalating aggression in social situations and neither punishment, nor positive reinforcement for prosocial behavior, nor conventional therapeutic interventions significantly reduce their aggressive behavior (Achenbach, 1974; Patterson, 1976; Patterson & Reid, 1970; Quay, 1964; Raush, 1965; Sears, 1961).

These characteristics of escalation, pervasiveness, persistence, and resistance to intervention all point to the

importance of determining the conditions which maintain aggressive behavior. Recent investigations have begun to focus on this issue by examining the role of social and interpersonal factors in the maintenance of aggression. A particularly promising area of research is the study of families of aggressive children by means of observational techniques. The use of observational procedures, as opposed to more traditional methodologies, has provided more direct access to the immediate interpersonal conditions which may maintain aggressive behavior. For example, a number of researchers have attempted to identify specific behaviors by parents or siblings in an interaction which precede and follow aggressive behavior by the target, aggressive child (Arnold, Levine, & Patterson, 1975; Delfini, Bernal, & Rosen, 1976; Patterson, 1976; Patterson & Cobb, 1973; Patterson & Reid, 1970; Sallows, 1972; Shaw, 1971; Synder, 1977; Wahl, Johnson, Johansson, & Martin, 1974). These antecedent and consequent events associated with an aggressive act typically are interpreted as the eliciting and reinforcing conditions which may contribute, in part, to the maintenance of aggression in the family context. The results of these studies indicate that family patterns which influence the maintenance of aggression may involve complex interactions between the following factors: 1) who is interacting with the child (e.g. parents vs. siblings or mothers vs. fathers); 2) the different forms or types of

aggressive behavior displayed by the target child; and 3) the behavioral quality of antecedent and consequent behaviors by other family members. Conflicting results in the literature indicate the need to reexamine a number of assumptions and generalizations about aggressive behavior patterns in children and raise some important, unresolved questions. For example: 1) do aggressive and normal children in fact differ in the frequency of aggressive behavior they display within the family; 2) regardless of the overall rate of aggressive behavior by a child, when a child does engage in an aggressive act, do parents of a normal child behave differently in response to that aggressive act from parents of a child diagnosed as aggressive; and 3) can differences in the frequency of the child's aggression be attributed to differential patterns of family interaction?

The present study was designed to clarify some of the issues relating to the maintenence of aggression within the family. The study attempted to identify interpersonal conditions which may maintain aggression by observing the immediate, ongoing interaction patterns in families of normal and aggressive adolescent sons. Previous observational studies typically have examined interactional behavior using coding systems which characterize behavior in terms of highly concrete, descriptive, discrete categories (e.g. categories such as "hit", "laugh", "cry", "whine").

However, such approaches are often conceptually limited by their overemphasis on topographic or descriptive, rather than functional, equivalencies among behaviors and by their implicit view of behavior as representing isolated or separate events rather than as part of an interpersonal exchange (Baar, 1979). In contrast, the present observational study used the Leary (1957) and Carson (1969) coding system which is intended to assess more directly the interpersonal impact of one person's behavior on another. This system codes each person's behavior according to two orthogonal interpersonal dimensions, a status dimension (dominant vs. submissive) and an affective dimension (friendly vs. hostile). Behaviors, therefore, fall into one of four quadrants or categories, namely, Friendly-Domiant (FD), Friendly-Submissive (FS), Hostile-Submissive (HS), and Hostile-Dominant (HD). The following examples represent typical behaviors in each category: (FD) give an opinion, take responsibility, advise, support; (FS) ask for help, seek support, cooperate, act dependent; (HS) nag, sulk, passively resist, act like a martyr; (HD) attack, mock, denigrate, accuse, threaten. Each cateogry then, not only describes a particular behavior by an individual, but also describes the interpersonal style or mode of influence used by that person toward others in the interaction.

Using the Leary and Carson coding scheme, the present study focused on two questions.

1. Are there differences between normal and aggressive-son families in the proportion of behavior by mothers, fathers, and sons in each of the four categories? This question addresses a preliminary issue of whether, in fact, these families differ in the relative rates of particular interpersonal behaviors.

2. Do normal and aggressive-son families differ with respect to sequential patterns of interaction? That is, are certain sequences of events more predictable in a particular type of family? In the present study, the patterns most relevant to the issue of the maintenance of aggression were those interactions in which behaviors by parents immediately preceded and followed hostile-submissive and hostile-dominant behaviors by sons. These patterns of antecedent and consequent behaviors by parents were viewed as the eliciting and reinforcing conditions which may contribute to the maintenance of aggression.[1]

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[1] In the interest of brevity the present paper only reports results obtained for parental antecedents to sons' behavior. Results obtained for patterns of parental consequents will be reported in future publications.

Method

The study included 12 families with an adolescent son between the ages of 13-16. A "family" in this study consisted of mother (M), father (F), and son (S). Six families had an adolescent son in full-time residential treatment for aggressive behavior. Quay's (1972) description of the unsocialized-psychopathic dimension of delinquency was used to derive a set of seven criteria for selecting the aggressive boys. Six normal families were selected from the community on the basis of 1) no previous history of psychological disturbance in the son, and 2) no contact with a mental health agency by parents in the last five years. Families were matched for age of parents, number of sibs in the family, socioeconomic status, and I.Q. of son.

Initially mother, father, and son in each family independently completed a 38-item questionnaire based on Mishler and Waxler's (1968) adaption of the Strodtbeck Revealed Difference Technique (1951). Items in the questionnaire were designed to encourage disagreement and potential conflict among family members, thus increasing the likelihood of observing aggressive or hostile behavior. In a subsequent session, each family was videotaped engaging in a 50-minute discussion of the questionnaire items.

The interpersonal behavior of family members was coded from the videotapes and corresponding transcripts. A "unit" was defined as the entire speech by one person bounded on either side by the speech of another person. Videotaped interactions were coded then by recording the speaker (mother, father, or son) for each unit and assigning one of the four behavioral codes (FD, FS, HS, HD). An additional "inaudible" code was used occasionally to designate those instances when a unit was unintelligible. An interrater agreement of 92% was achieved by two independent, blind raters.

Results and Discussion

The first question addressed in analyzing the data was whether normal and aggressive-son families differed in the proportion of each member's behavior in the four behavioral categories. (Proportions were used rather than raw frequencies since the number of total units per person varied.) Proportions were examined by means of a 2 (groups) x 3 (person - M, F, S) x 4 (category - FD, FS, HS, HD) analysis of variance, with person and category as the within factors, and groups as the between factor. Significant effects from this analysis were examined further with the Newman Keuls Test for multiple comparisons of means. Table 1 presents the means and standard deviations for the proportional data.

Aggressive-son families as a group had significantly less FD behavior, and significantly more HS and HD behavior than normal-son families, $F(3,30) = 5.75$ ($p < .01$). (See Figure 1.) No significant group difference was found for the FS category. The finding that aggressive-son families as a unit had greater proportions of both HS and HD behavior supports previous suggestions in the literature (Arnold et. al., 1975; Patterson, 1976; Patterson & Reid, 1975) that in families with an aggressive child, all members, and not just the target child, are relatively aggressive. For instance, it is noteworthy that within the aggressive-son families mothers had the highest mean proportion of HD behavior. (See Figure 2.) Assuming that HD behavior is a reflection of interpersonal aggression, it appears that in the family setting, the mothers of aggressive sons tend to be even more aggressive than their sons.

The analysis of the proportional data also revealed a significant person x category interaction, $F(3,30) = 7.48$ ($p < .01$). Sons as a whole had significantly less FD behavior and significantly more HS behavior than either mothers or fathers.

In addition to the overall analysis, proportions in each category separately were subjected to a 2 (groups) x 3 (person) analysis of variance, with person as the within variable, and groups as the between factor. The most

interesting findings from these analyses concerned sons. While sons in general showed more HS behavior than parents, as discussed above, aggressive sons displayed significantly more HS behavior than normal sons, $F(2,20) = 10.95$ ($p < .01$). (See Figure 2.) This difference between normal and aggressive sons was particularly noteworthy given the fact that HS behavior occurred least frequently among the four categories. Contrary to expectation, there was no difference in the mean proportion of HD behavior by aggressive and normal sons. Thus, while aggressive-son families as a whole displayed both more HD and HS behavior than normal families, what distinguished aggressive from normal sons was not the more frequently occurring direct, overt expressions of aggression (HD category), but rather the indirect, "passive-aggressive" style of aggression (HS category).

The next focus of the study concerned the sequential patterns of interaction in normal and aggressive-son families. A sequential contingency analysis (Bakeman, 1975a, 1975b) for each family produced conditional probabilities and associated z-scores indicating the predictability of a target behavior from an immediately preceding antecedent event. The signed z-score indicated whether a particular target behavior followed a particular antecedent more or less often than chance. A constant of 10.00 was added to each z-score and all subsequent analyses

were performed on transformed z-scores. A z-score greater than 10.00 indicated that a particular antecedent-response combination occurred more often than expected by chance, and a score of less than 10.00 indicated that an antecedent-response combination had a less than chance probability of occurrence. The present study was concerned with those antecedent-response combinations in which a behavior by either mother or father preceded a behavior by son. Only combinations involving the FD, FS, and HD categories were examined since the relatively low occurrence of HS behavior was insufficient for appropriate analysis.[2]

The z-scores for the relevant antecedent-response combinations were analyzed first to determine overall group differences. The four way analysis of variance was a 2 (group) x 2 (parent - M, F) x 3 (antecedent by parent - FD, FS, HD) x 3 (response by son - FD, FS, HD) mixed model, with groups as the between factor, and parent, antecedent, and response as within factors. As expected, there was a significant relationship between antecedent behaviors by parents and responses by sons, $F(4,40) = 10.26$ ($p < .01$). That is, by knowing what category of behavior by either mother or father had just occurred, the behavioral category of the son's response could be predicted. This antecedent-

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[2] The fact that the HS category could not be included in the sequential analysis was particularly regrettable, given the extent to which normal and aggressive sons differed in this category.

response interaction was analyzed further with the Newman Keuls Test to determine which particular antecedent-response combinations were significant. A FD parent behavior was typically followed by a FS son behavior, a FS parent behavior was followed equally often by a FS or FD son behavior, and a HD parent behavior was followed most often by a HD son behavior. Contrary to expectation, the predictability of these patterns did not differentiate normal and aggressive-son families. Although aggressive-son families as a whole had a higher proportion of HD behavior than normal families, it was equally likely in both groups that any one instance of a HD behavior by a son had been preceded by a HD behavior by a parent. This finding suggests that the occurrence of HD behavior by aggressive sons can not be attributed to different patterns of antecedent behavior by their parents as compared to parents of normal sons. While HD behavior by parents may elicit, and thereby in part maintain HD responses by sons, this pattern does not appear to be unique to aggressive-son families.

Although the sequential patterns in these two groups of families did not differ with respect to the content or category of behavior, families did differ in the pattern of speaker sequence, $F\ (1,10) = 9.886$ ($p < .05$). Regardless of the specific category of parental antecedent and son response, in normal families, fathers' behavior preceded

son' behavior more often than chance (z-score = 10.05), and mothers' behavior preceded sons' behavior less often than chance (z-score = 9.89). The pattern was reversed in aggressive-son families, with mothers preceding sons more often than chance (z-score = 10.18), and fathers preceding sons less often than chance (z-score = 9.45). In addition, the difference between the mean z-scores for mothers and fathers in the aggressive group was more extreme than for mothers and fathers in the normal group. Thus, with respect to patterns of who interacts with whom, the most predictable sequences occurred in the aggressive group.

The analysis of group differences in sequential interaction patterns indicated then that what distinguished patterns of interaction in these families was not the behavioral content of antecedent and response events, but rather which members of the families were most likely to interact with each other. The predominance of mother-son interactions in the aggressive-son families lends some support to previous observations in the literature that in aggressive-son families, mothers per se, regardless of their specific behavior, tend to be more salient "stimuli" for aggression by sons than do fathers (Patterson & Cobb, 1973). The conditions which maintain aggression in aggressive-son as opposed to normal-son families may depend in part on the differential impact or influence of mothers and fathers in these two groups.

In addition to analyzing overall group differences, patterns of interaction for each of the 12 families were also examined separately, since the standard deviations associated with group mean z-scores indicated considerable variability among families. Whereas the overall analysis examined antecedent-response combinations for all categories, except the HS category, the comparison of individual families addressed only those combinations in which parental antecedents preceded HD behavior by son. A comparison of mean z-scores for parental antecedents to sons' HD behavior (Table 2) and the individual z-scores for each family (Figures 3-6) revealed a number of interesting findings. As discussed earlier, and as indicated by the means in Table 2, HD behavior by sons, on the average, was preceded more often than chance by a HD behavior by a parent, and less often than chance by either a FD or FS parental behavior. However, examination of the data for individual families revealed that HD-HD, parent-son sequences sometimes occurred less often than chance, as indicated by the pattern for fathers in normal families 2, 4, 5, 6 (Figure 3); mothers in normal families 1, 4, 6 (Figure 4); and fathers in aggressive-son families E, C, F (Figure 5). In addition, in some families a HD behavior by son was more likely to be preceded by either a FD or FS parent behavior rather than a HD behavior, as with fathers in normal families 2, 5, 6 (Figure 3); mothers in normal

families 4, 6 (Figure 4); and the father in aggressive-son family F (Figure 5). The most consistent pattern of results, with respect to HD-HD sequences occurred for mothers in the aggressive group (Figure 6). In each of the six aggressive-son families, a HD behavior by son was always more likely to be preceded by a HD rather than a FD or FS behavior by mother. Secondly, in all six aggressive-son families, HD-HD mother-son sequences always occurred more often than chance. The mean z-scores for HD-HD sequences (Table 2) also indicated that the most predictable pattern in these families was the HD interchanges between mothers and sons in the aggressive group. This descriptive examination of individual families is consistent with the interpretation that mothers in the aggressive-son families may play a critical role in the family interaction patterns which contribute to the maintenance of aggression by the son.

Summary

The present study addressed the issue of the maintenance of aggression by examining the interpersonal behavior and sequential interaction patterns in families of normal and aggressive adolescent sons. The Leary categories were used to describe the interpersonal behavior of family members and results indicated that aggressive-son families as a whole were more aggressive or hostile than normal families.

Contrary to expectation, when sons were considered separately they did not differ in the amount of overt, direct aggression. Interestingly, it was the amount of indirect, passive aggression which differentiated aggressive from normal sons.

Findings from the proportional analyses raise two important implications for subsequent research with aggressive children. First, the findings point to the inadequacy of conceptualizing aggression as a global construct. Whereas previous research has focused largely on overt or direct expressions of aggression by children, it seems equally important to consider more subtle, indirect expressions of aggression. Moreover, the particular form or pattern of aggression (e.g. direct versus passive) which distinguishes aggressive from normal children may depend on the child' social context (e.g. peer, school, family). For instance, in families of aggressive children the most interesting interaction patterns may be those which maintain hostile-submissive forms of aggression. Secondly, the findings of the present study underscore the importance of considering aggression as both a characteristic of the individual child, and as a characteristic of the child's social context, such as the family unit. The question of maintenance then becomes a broader one. In addition to determining what parental behaviors contribute to the maintenance of aggression in the child, the more general

question concerns the conditions which contribute to the maintenance of aggression in the family unit as a whole.

Examination of the sequential patterns of interaction in the two groups of families revealed that certain types of behavior occurred in predictable sequences. For instance, HD behavior by sons was typically preceded by HD behavior by parents. Since normal and aggressive-son families were similar in this respect, the occurrence of a HD behavior by aggressive sons could not be attributed to a differential pattern of antecedents by parents of normal versus aggressive sons. However, the two types of families did differ according to who was most likely to be interacting with whom. In normal families, fathers were more likely than mothers to interact with sons, whereas in aggressive-son families, mother-son interactions were more likely to occur than father-son interactions. HD-HD interchanges between mother and son in the aggressive group were the most predictable sequences of interaction, with greater hetereogeneity in the patterns for mothers and fathers of normal sons and fathers of aggressive sons.

Results from the sequential analysis suggest that the maintenance of aggression in different types of families may relate more to the differential roles or impact of mothers and fathers than to any one specific type(s) of eliciting antecedent to the child's aggressive behavior. The results

also confirm the importance of sequential analysis as a means of determining whether differences in the frequency of aggression by different types of children can in fact be attributed to differential patterns of interaction within families. Finally, the study argues for the necessity of examining multiple features of social interactions. Both the quality of behavior and the role of the person (viz. mother, father, son) may be important variables to consider in future research on interaction patterns in families of aggressive children.

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PROPORTION OF BEHAVIOR PER CATEGORY

		NORMAL			AGGRESSIVE		
		M	F	S	M	F	S
FD	$\bar{X}$	58.03	67.42	51.77	47.76	56.71	36.68
	S.D.	10.07	4.38	13.43	13.88	5.19	11.25
FS	$\bar{X}$	25.37	22.20	28.64	20.00	22.50	15.52
	S.D.	4.17	7.27	11.43	9.46	7.91	8.58
HS	$\bar{X}$	4.18	1.34	7.89	3.73	2.85	24.24
	S.D.	2.99	.51	7.59	4.36	2.89	7.14
HD	$\bar{X}$	11.82	8.85	10.96	28.31	17.65	22.82
	S.D.	6.29	4.40	12.47	22.26	6.22	11.45

M = Mother
F = Father
S = Son

FD = Friendly-Dominant
FS = Friendly-Submissive
HS = Hostile-Submissive
HD = Hostile-Dominant

Table 1

ANTECEDENTS TO SONS' HOSTILE-DOMINANT BEHAVIOR

Z scores (plus constant of 10.00) for sequential conditional probabilities.

		NORMAL		AGGRESSIVE	
		M	F	M	F
FD	$\bar{X}$	9.59	10.02	8.67	9.52
	S.D.	.88	.58	.97	1.25
FS	$\bar{X}$	9.74	9.78	9.31	8.99
	S.D.	.96	.99	.42	1.01
HD	$\bar{X}$	10.81	10.66	12.36	10.68
	S.D.	1.50	1.94	2.02	.95

M = Mother
F = Father

FD = Friendly-Dominant antecedent
FS = Friendly-Submissive antecedent
HD = Hostile-Dominant antecedent

Table 2

PROPORTION OF BEHAVIOR PER CATEGORY PER FAMILY TYPE

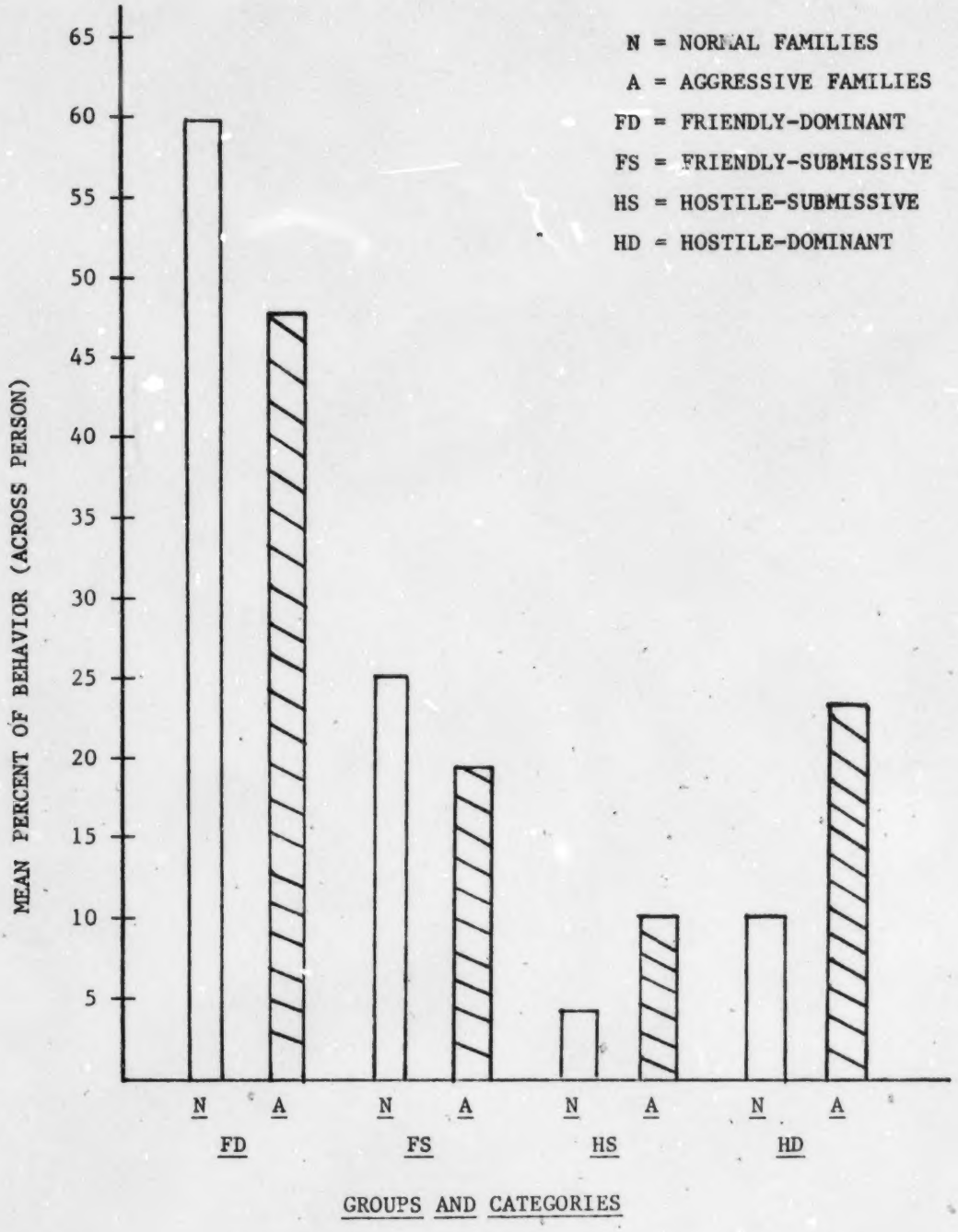


Figure 1

PROPORTION OF BEHAVIOR PER MEMBER PER CATEGORY PER FAMILY TYPE

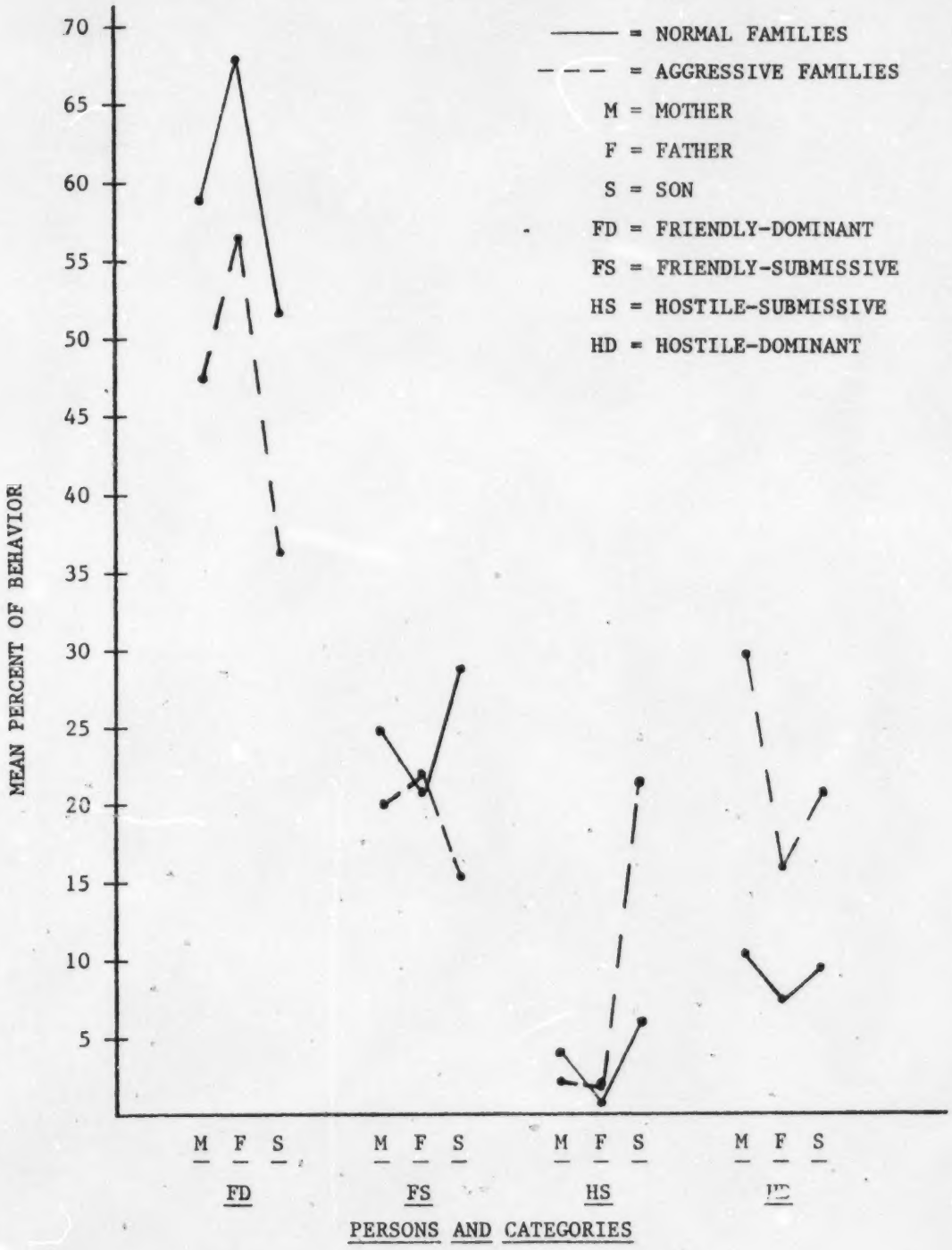
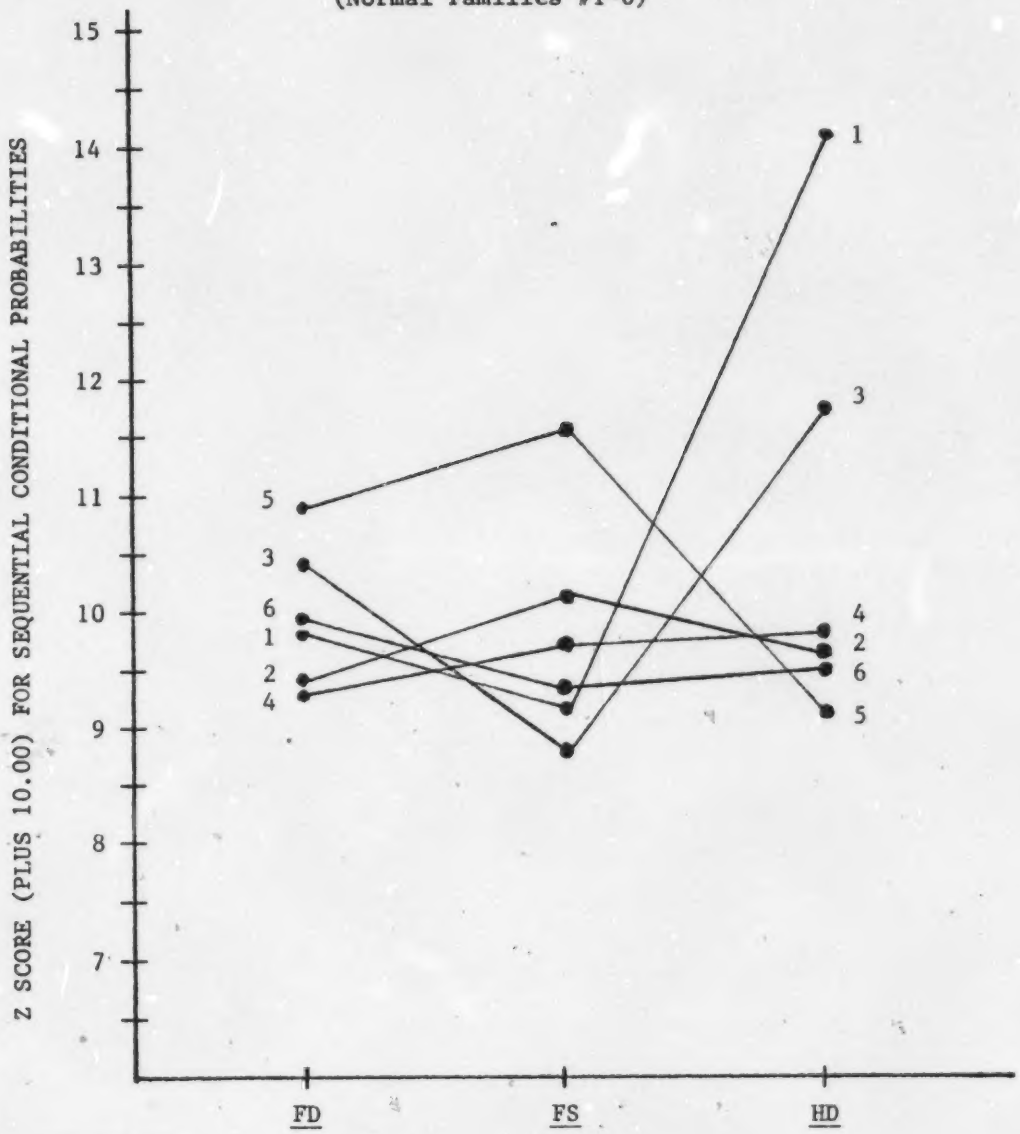


Figure 2

ANTECEDENTS TO SONS' HOSTILE-DOMINANT BEHAVIOR

(Normal Families #1-6)



ANTECEDENTS BY FATHER

FD = FRIENDLY-DOMINANT

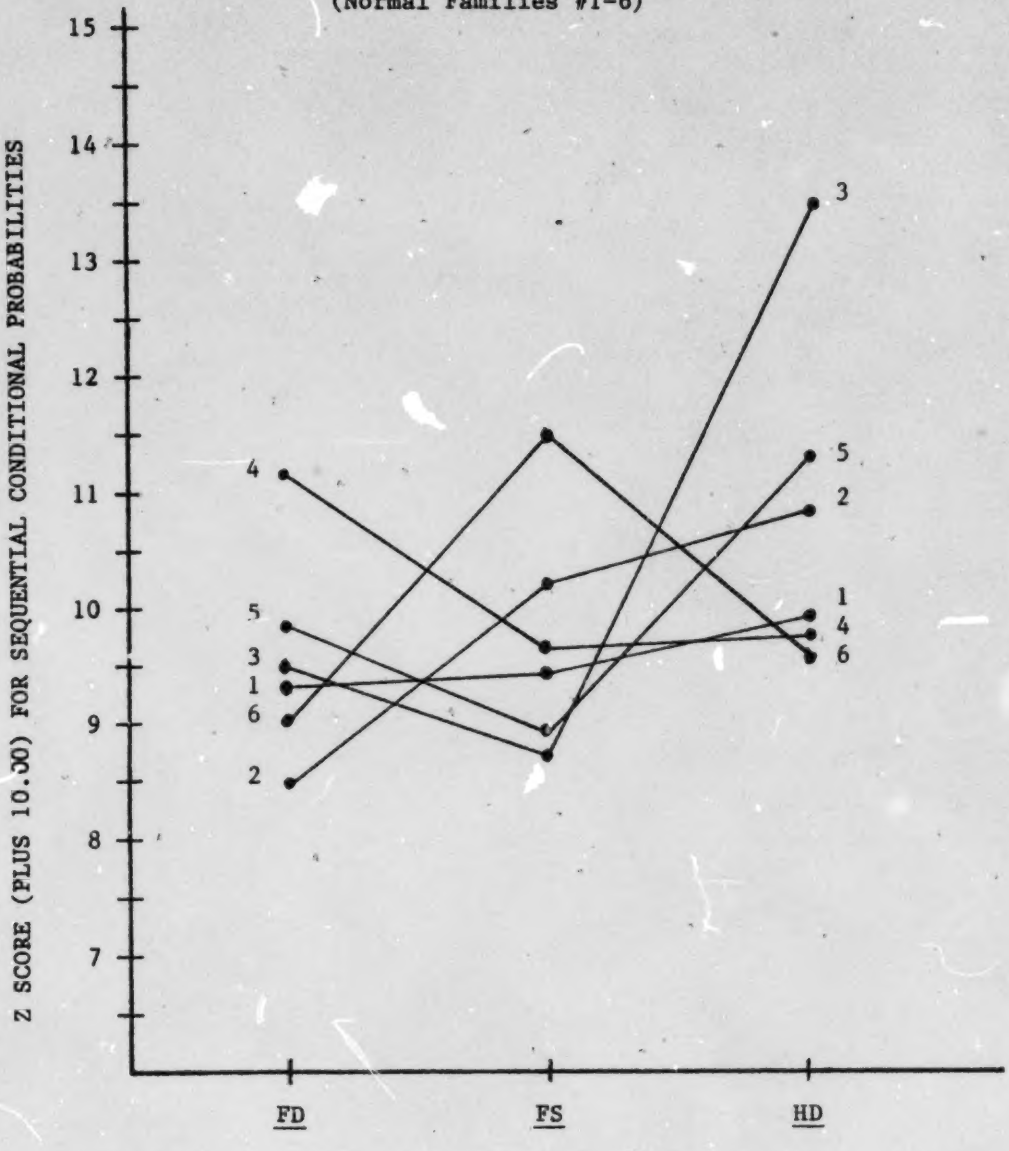
FS = FRIENDLY-SUBMISSIVE

HD = HOSTILE-DOMINANT

Figure 3

ANTECEDENTS TO SONS' HOSTILE-DOMINANT BEHAVIOR

(Normal Families #1-6)



FD = FRIENDLY-DOMINANT

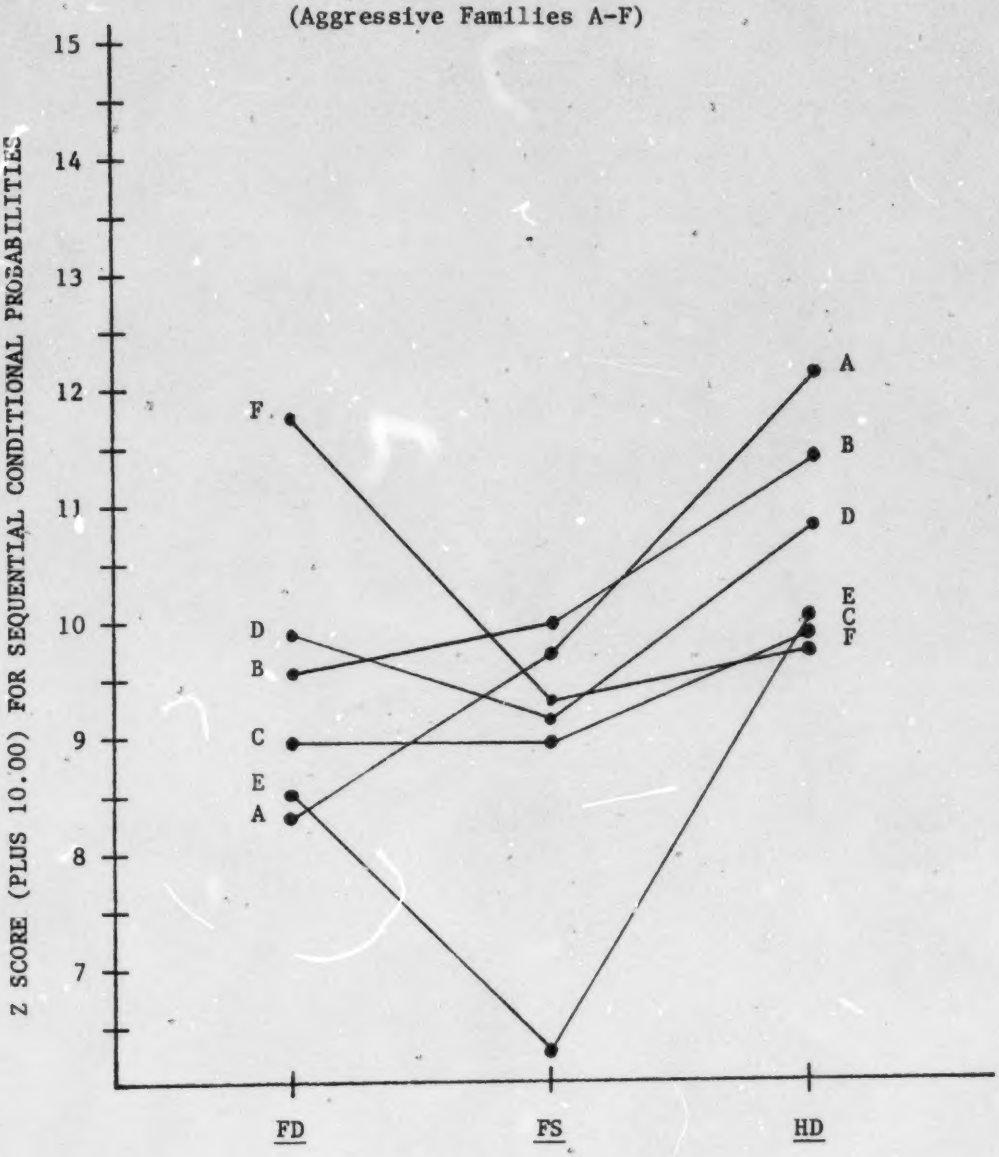
FS = FRIENDLY-SUBMISSIVE

HD = HOSTILE-DOMINANT

Figure 4

ANTECEDENTS TO SONS' HOSTILE-DOMINANT BEHAVIOR

(Aggressive Families A-F)



ANTECEDENTS BY FATHER

FD = FRIENDLY-DOMINANT

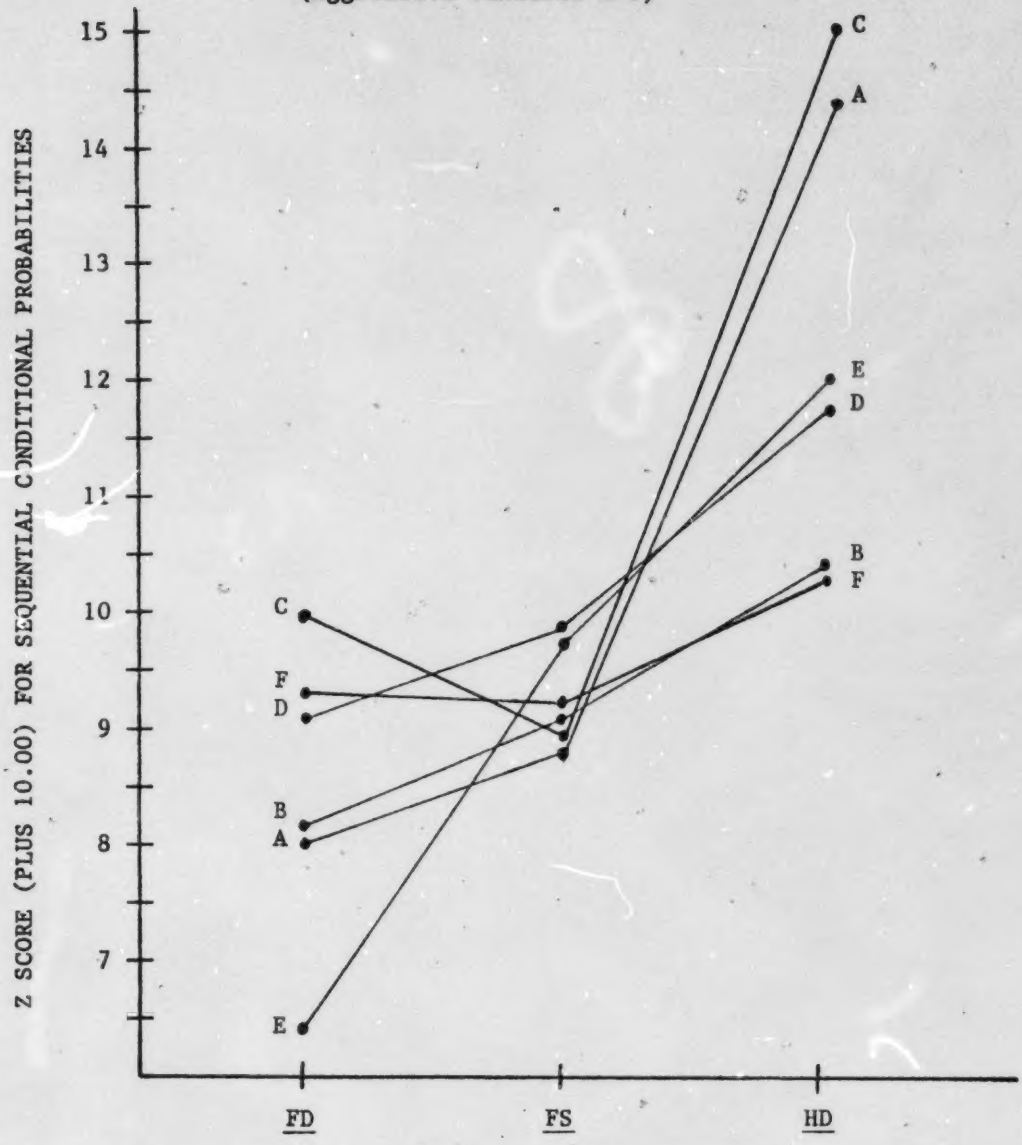
FS = FRIENDLY-SUBMISSIVE

HD = HOSTILE-DOMINANT

Figure 5

ANTECEDENTS TO SONS' HOSTILE-DOMINANT BEHAVIOR

(Aggressive Families A-F)



ANTECEDENTS BY MOTHER

FD = FRIENDLY-DOMINANT

FS = FRIENDLY-SUBMISSIVE

HD = HOSTILE-DOMINANT

Figure 6